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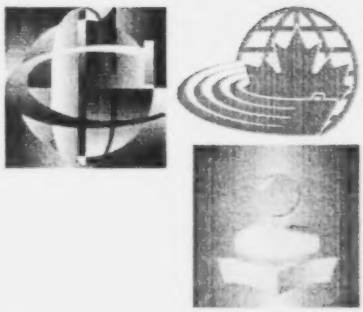
Canadian School Libraries and Teacher-Librarians: Results from the 2003/04 Information and Communications Technologies in Schools Survey



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David Coish
Statistics Canada

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1. Introduction

The United Nations Educational, Scientific and Cultural Organisation (UNESCO) School Library Manifesto states that 'the school library provides information and ideas that are fundamental to functioning successfully in today's society, which is increasingly information and knowledge-based. The school library equips students with lifelong learning skills and develops the imagination, enabling them to live as responsible citizens.'[1]

Published reports have demonstrated the positive impact of school library funding and the presence of a teacher-librarian on student outcomes. In 1997, Ontario's Education Improvement Commission acknowledged that, "there is a good body of evidence that good teacher-librarians can make a great difference in the life of a school and help improve student achievement".[2] Ken Haycock (2003) reviewed research undertaken on the relationship between the presence of a school library and school librarians, and student testing. He found that the research showed that larger collections, greater funding for the school library and more access to a qualified teacher-librarian correlates with higher achievement levels. Improvements were even greater when teacher-librarians collaborated with classroom colleagues, teaching literacy skills and participating in technology management within the school.[3]

For these reasons, school library data are relevant not only for school board officials and educators, but also for students and their parents.

Although a number of sources contain some data on school libraries,[4] no comprehensive national source has existed since the cancellation of Statistics Canada's Survey of School Libraries in 1982.[5] The issue of data availability on school libraries has become more acute in recent years given funding challenges for provincial departments of education, school boards and schools.

Recent evidence suggests that many full-time librarian positions in Canadian schools have been scaled back to part-time, eliminated altogether, or replaced by library technicians.[6] Provincial data on school libraries, such as the tracking system developed by *People for Education*, have revealed that the number of elementary schools in Ontario with a full-time teacher-librarian has declined by 60% since 1998/99.[7] Similar results are available for some other provinces.[8] There are also reports of downstream effects from reduced professional library staff, which include aging and depleted collections in school libraries and reduced access to the libraries that do exist.[9]

Yet, a common belief is that recent technological advances result in less need for librarians in schools, given that more information can now be obtained through the Internet. This belief has been countered, however, with the argument

that the Internet is like a library without standards or catalogues. One still needs librarians and proper training if users hope to benefit from the riches of the Internet and libraries. This response is supported by school principals who acknowledge the need for librarians to teach students how to use library and Internet resources. In fact, slightly less than half of school principals from the 2003/04 Information and Communications Technology in Schools Survey (ICTSS) felt that the 'majority of their teachers were adequately prepared to engage their students effectively in the use of ICT to enhance their learning.'[10] Teacher-librarians often serve as resource people in transferring knowledge of ICT and its utility in research, teaching and learning.

Gibson and Oberg (2003) in a Canadian study of officials from the ministries of education and teacher associations, as well as classroom teachers and school administrators, reached similar conclusions. They found that 'all four groups reported that the Internet was being used mostly to increase access to information... Few respondents reported using the collaboration, creation and dissemination capabilities of the Internet.'[11]

Given the apparent links between student success and the availability of school libraries and staffing by teacher-librarians, new data are required to understand better the current health of school libraries in Canada. This report is a preliminary step toward providing up-to-date national data and analysis of the Canadian school library system.

1.1 What this report will cover

This report will primarily analyze results linked to the school library questions in the Information and Communications Technologies in the Schools Survey (ICTSS). The key analytical criterion examined is the province where the school is located, given that education is a provincial jurisdiction and variations in funding and staffing can be expected across provinces. Analysis by province is also done separately for elementary and secondary schools.

The presence of library staff such as teacher-librarians or library technicians is then reviewed by province, on a per school and per student basis. The latter approach provides a measure which adjusts for differences in student body population. These measures also give benchmarks of library staffing in 2003/04 that would facilitate trend analysis if the library questions are repeated in a future survey.

Next, mean expenses on library collections development are examined by province and per student for the physical collection, and audio-visual and electronic materials. Following this, the sources of funding for school libraries are examined to determine provincial/territorial differences.

The presence of teacher-librarians and library funding are then linked by comparing them with provincial achievement scores on standard international student assessments. Although this report cannot make a direct link between the presence of a teacher-librarian and library funding with student achievement, American literature suggests that this link does exist.[12]

This section is followed by an overview of student-educator ratios and per-capita education expenditures within the context of the presence of a teacher-librarian. These issues are examined because funding decisions are often reduced to student-teacher ratios versus specialized staff, such as teacher-librarians.

The degree to which nine types of technology applications are incorporated into teaching practice in the school is linked with the presence of a teacher-librarian and the number of teacher-librarians per student. This approach tests the hypothesis that schools with full-time teacher-librarians, or more teacher-librarian resources per student, are more likely to incorporate technology applications into teaching practices in the school. This analysis assumes that teacher-librarians are skilled in the use of many types of software used for research and also general learning. Further, a function of many teacher-librarians is to impart their knowledge to teachers, in addition to students.

The report then examines the link between the amount of library funding and funding per student, and the degree to which these technologies' applications are incorporated into teaching practices. The assumption tested is that a better-funded library will be in a better position to educate/train teachers about applications that facilitate research, as well as other software.

These hypotheses are tested through a series of simple correlations. Since many factors may influence the incorporation of a particular technology application into teaching practices within a school, causation is not examined.

A table showing the location (including the school library) of computers is provided. This gives a sense of one link between technology and the school library.

Finally, this report examines whether links to the library can be found on non-administrative school websites. This is carried out for schools with one or more full-time equivalent (FTE) teacher-librarians, compared with the rest of the schools which have a library but less than a full-time teacher-librarian. The importance of the school librarian as a developer or contributor to the school website is also discussed under the rubric of the teacher-librarian as a key player in the development and dissemination of information.

1.2 Data sources and sponsors

The 2003/04 Information and Communications Technologies in Schools Survey (ICTSS) collected information from elementary and secondary school principals in Canada. The purpose was to examine connectivity and information and communications technologies (ICT) integration in education. Specifically, data were collected on the infrastructure and reach of ICT technologies in schools. Infrastructure included the different components of ICT that make up the underlying foundation of a connected school, such as the number of computers and their characteristics. Reach refers to the degree to which teachers and students had access to the ICT infrastructure. This survey was the first comprehensive Canada-wide survey on this subject.

The ICTSS was conducted by Statistics Canada and was sponsored by Industry Canada's SchoolNet Program. Support was also provided by Library and Archives Canada for the inclusion of four questions on school libraries in the

questionnaire. These questions examined whether a school library exists, the number of FTE employees devoted to the library by type of position, the annual expenses for the library's collection development and the source of library funding.

Library and Archives Canada, in addition to the Canadian Association for School Libraries, provided funding for the production of this analytic report.

Box 1.1 Survey population and methodology

The ICTSS was a census of approximately 15,500 elementary and secondary schools across Canada. Response to the survey was voluntary. The questionnaires were mailed to school principals in October/November 2003 and they were asked to mail back the questionnaires when completed.

The target population was all elementary and secondary schools in Canada, but excluded continuing education/adult day schools, trade/vocational schools, language and cultural education schools, home schools, community education centres and social service centres.

Useable data was collected for almost 6,700 schools in all the provinces and territories. The response rate was 43% of all schools. Weights were calculated for each school to correct for total non-response. Since errors are not generally random a proper adjustment was needed to compensate for systematic non-response. Adjustment classes were defined based on province/territory, language of the school, instructional level of the school, location of the school, administration of the school and size category. After each adjustment class was defined, an adjustment weight was calculated for each category within each adjustment class. The combined weight of all adjustment classes for each school was then assigned and represented the number of other schools in the population with similar characteristics that did not respond to the survey.

Data used in this report have also been adjusted for extreme values.

Response rates by province and territory, as well as additional information on the definitions, data sources and methods of the ICTSS are available at: www.statcan.ca/Daily/English/040610/d040610b.htm.

Box 1.2 Definitions

General:

An **educator** includes all employees in the public school system (either school-based or school district-based) who are required to have teaching certification as a condition of their employment.

A **library** or learning centre is a centralized facility where a collection of learning materials, such as books, magazines, audio-visual and electronic materials, is staffed for pupils and teachers. It does not include classroom collections and book collections not specifically designated as a library facility.

Software are programs that tell a computer what to do, or computer instructions. Examples of more popular software are MS WORD™, Corel WordPerfect™, Quattro Pro™ and Norton. Utilities™.

Instructional level of the school:

An **elementary school** provides Grade 6 and under or a majority of elementary grades.

A **secondary school** provides Grade 7 and over or a majority of secondary grades.

Mixed elementary and secondary schools offer a combination of elementary and secondary grades.

Staff:

A **library technician** possesses a technical certificate and/or diploma acquired from an accredited library technician program, usually from a community college or Collège d'enseignement général et professionnel (CEGEP).

A **professional librarian** possesses a Masters degree (or its historical antecedent) from a graduate library education program accredited by the American Library Association. Individuals in this category are not employed as professional teachers.

A **teacher-librarian** possesses qualification as a professional teacher with additional qualifications such as a certificate, diploma or graduate degree in school librarianship. They focus on integrating information technology with the curriculum, and work with teachers to design curriculum and research units.

A **teacher non-librarian** does not possess additional qualifications such as a certificate, diploma or graduate degree in school librarianship.

2. Presence of a school library

The vast majority of schools in Canada had a library (14,451) in the 2003/04 academic year (93.3%). For each province, over nine of out ten schools had this facility, ranging from 91.2% in Alberta to 97.8% in New Brunswick. In the territories, 76.5% of schools in the Northwest Territories (NWT) and 81.6% in Nunavut had libraries.

Compared to secondary schools (90.7%), elementary schools were more likely to have a library (95.4%). Mixed elementary and secondary schools were less likely to have a school library (87.2%), but this lower value was largely explained by the low percentage for mixed schools in Ontario (69.5%). If Ontario is excluded, 90% of mixed schools had a library in the 2003/04 academic year.

Looking at the presence of a school library by an urban/rural split shows that urban schools were slightly more likely to have a school library (93.5%) compared with schools in rural jurisdictions (92.8%). Recent school closures and consolidation into larger schools in some rural areas might explain why rural schools were almost as likely as urban schools to have a library.

Table 1

Percentage of schools with a library by instructional level of school and province and territory, 2003/04

	Instructional level of school			
	All schools	Elementary	Secondary	Mixed elementary and secondary
	%			
Newfoundland and Labrador	94.6	96.2	F	91.0
Prince Edward Island	F	F	F	F
Nova Scotia	96.8	96.2	98.4	96.3
New Brunswick	97.8	F	F	F
Quebec	92.2	91.6	94.1	94.6
Ontario	93.5	95.8	90.2	69.5
Manitoba	91.8	94.6	F	83.8
Saskatchewan	94.9	97.9	94.9	91.2
Alberta	91.2	97.5	84.6	88.1
British Columbia	94.7	98.2	85.3	95.6
Yukon	F	F	F	F
Northwest Territories	76.5	79.2	F	68.2
Nunavut	81.6	70.6	F	F
Canada	**93.3**	**95.4**	**90.7**	**87.2**

F coefficient of variation greater than 33%; data are too unreliable to publish

° coefficient of variation between 16.6% and 25%; data are less reliable

°° coefficient of variation greater than 25% and less than or equal to 33%; data are less reliable

Source: *Information and Communications Technologies in Schools Survey, 2003/04.*

Despite widely-held beliefs about the superiority of private schools, a much larger percentage of public schools (95.4%) than private schools (75.4%) had libraries. This may be explained by the fact that many private schools were small facilities with lower average enrolments, thus reducing their ability to support a library.

3. Presence of a teacher-librarian or other staff

Teacher-librarians are educators who teach from kindergarten to Grade 12 as well as being librarians who manage a school's library. As a result of these two roles, a teacher-librarian is involved in instruction in reading and research as well as maintaining and updating the school's library collection. According to the Ontario-based organization People for Education: "Teacher-librarians work with classroom teachers to co-ordinate library resources with curriculum requirements. They (also) develop library collections and teach research strategies and literacy skills."[13]

Nationally, each school had, on average, 0.25 full-time equivalent (FTE) teacher-librarians devoted to the school library. There was much provincial variation, however. Prince Edward Island had an average of 0.56 teacher-librarians per school compared with 0.03 in Quebec and 0.07 in Nova Scotia and Alberta. Schools in British Columbia (0.48), Ontario (0.39) and Newfoundland and Labrador (0.27) were also above the national average level (0.25).

Across Canada, schools had a higher average number of library technicians (0.26) than teacher-librarians (0.25). The provinces with some of the lowest average numbers of teacher-librarians per school had the highest number of library technicians. These included Alberta (0.47), Saskatchewan (0.44), Nova Scotia (0.42) and Manitoba (0.41). Although library-technicians possess a technical certificate and/or diploma they do not have a blend of classroom experience and library training like teacher-librarians. As a result, the library technician performs a narrower set of duties than a teacher-librarian. Furthermore, a 2000 study of students in Massachusetts[14] found that elementary and secondary students in schools with a full-time teacher-librarian had higher scores in comprehensive assessments than those in schools without one.

Library technicians also earn much lower average salaries than university-trained teacher-librarians. With recent cuts in the budgets of education ministries, school boards and schools, a substitution of teacher-librarian positions for lower paid library technician positions may have been a common cost-cutting measure in many provinces. Australian evidence echoes this, as several state-based surveys found commonplace that schools were using librarians instead of teacher-librarians, or had staff in the library without teaching or library experience.[15]

Quebec had the lowest provincial average number of teacher-librarians but had the highest average number of teacher non-librarians (0.12) and professional librarians (0.07) devoted to the library.

Clerical workers constituted almost one out of five (19.1%) FTE employees devoted to the library (see Appendix B). This ranged from an average of 0.26 clerical staff per school in Manitoba to 0.03 in Newfoundland and Labrador. It appears that many schools relied on staff without school library training to keep libraries open.

Lastly, other staff (excluding volunteers) constituted an average of 0.05 FTE employees per school library in Canada. Although the ICTSS question on staffing did not ask about school library volunteers, a sizeable number of respondents reported that volunteers solely, or with other staff, operated the school library. Although volunteers may have prevented a reduction in library hours or the permanent closure of the library, they cannot perform the same range of duties as a teacher-librarian or a library technician. Survey data collected on Ontario schools by People for Education show that 48% of schools reported that their libraries were staffed by volunteers in 2001/02, up from 41% in 1998/99.[16]

Table 2

Average library staff per school by province and territory, 2003/04

	Teacher-librarian	Teacher-non-librarian	Professional librarian	Library technician	Clerical staff	Other
	means					
Newfoundland and Labrador	0.27	0.09*	F	F	0.03**	0.03**
Prince Edward Island	0.56	F	F	F	F	F
Nova Scotia	0.07	0.01**	0.04	0.42	0.06	F
New Brunswick	0.08	0.03*	0.05	0.27	0.12	0.11
Quebec	0.03*	0.12*	0.07	0.20	0.15	0.07*
Ontario	0.39	0.03**	0.02	0.24	0.11	0.03
Manitoba	0.17	0.03**	0.04**	0.41	0.26	0.06**
Saskatchewan	0.24	F	F	0.44	0.18	0.07*
Alberta	0.07	0.05	0.04	0.47	0.22	0.10
British Columbia	0.48	0.03*	F	0.10	0.22	0.04**
Yukon	0.35	F	F	F	F	F
Northwest Territories	F	F	F	0.26*	F	F
Nunavut	F	F	F	F	F	F
Canada	**0.25**	**0.05**	**0.03**	**0.26**	**0.15**	**0.05**

F coefficient of variation greater than 33%; data are too unreliable to publish

* coefficient of variation between 16.6% and 25%; data are less reliable

** coefficient of variation greater than 25% and less than or equal to 33%; data are less reliable

Source: *Information and Communications Technologies in Schools Survey, 2003/04.*

Looking at the presence of a teacher-librarian per 1000 students shows that PEI and British Columbia continued to lead the pack. Ontario was far behind with less than one teacher-librarian per 1000 students (0.90). Quebec and Nova Scotia had the lowest ratios at 0.07 and 0.19, respectively.

Table 3

Number of teacher-librarians per 1,000 students by province and territory, 2003/04

	Number of teacher-librarians
Newfoundland and Labrador	0.87
Prince Edward Island	1.60
Nova Scotia	0.14
New Brunswick	0.72**
Quebec	0.22
Ontario	0.93
Manitoba	1.36*
Saskatchewan	1.18
Alberta	0.19
British Columbia	1.53
Yukon	1.45
Northwest Territories	F
Nunavut	F
Canada	**0.79**

F coefficient of variation greater than 33%; data are too unreliable to publish

* coefficient of variation between 16.6% and 25%; data are less reliable

** coefficient of variation greater than 25% and less than or equal to 33%; data are less reliable

Source: *Information and Communications Technologies in Schools Survey, 2003/04.*

Prince Edward Island, Ontario and British Columbia led all provinces with the largest percentage of schools having one or more teacher-librarians on staff. Yet, only one in three (34.8%) schools in Prince Edward Island had one or more FTE teacher-librarians.

The provinces showing very low reliance on teacher-librarian staff were Quebec (96.6% of schools had no teacher-librarians devoted to the school library), Nova Scotia (92.3%), New Brunswick (88.3%) and Alberta (87.3%). Whether low provincial rates of teacher-librarian staffing are historically the case, or whether there have been recent cuts in teacher-librarian positions, or both, is not discernable from this point-in-time survey.

A 2003 study[17] compiled from several provincial sources, however, found substantial declines in the number of teacher-librarians in Ontario, British Columbia, Alberta and Nova Scotia in recent years. For example, there were 252 teacher-librarians half-time or more in Alberta in 1998, but just 106 in 2000.

British Columbian schools relied more heavily on part-time (more than zero but less than one FTE) teacher-librarians with over half (55.1%) of schools having part-time teacher-librarian resources devoted to the library. Prince Edward Island (40.6%) and Newfoundland and Labrador (37%) schools followed.

Table 4

Percentage of schools with libraries that have teacher-librarians, by province and territory, 2003/04

	Teacher-librarian		
	One or more	Between 0 and 1	None
		%	
Newfoundland and Labrador	12.7	37.0	50.3
Prince Edward Island	34.8	40.6	24.6
Nova Scotia	5.4	2.3*	92.3
New Brunswick	4.5	7.2	88.3
Quebec	2.0*	1.4*	96.6
Ontario	21.8	33.1	45.1
Manitoba	10.2	13.6	76.2
Saskatchewan	9.4	33.8	56.9
Alberta	3.6	9.1	87.3
British Columbia	19.7	55.1	25.1
Yukon	F	F	F
Northwest Territories	F	F	F
Nunavut	F	F	F
Canada	**13.3**	**24.7**	**62.0**

F coefficient of variation greater than 33%; data are too unreliable to publish

* coefficient of variation between 16.6% and 25%; data are less reliable

** coefficient of variation greater than 25% and less than or equal to 33%; data are less reliable

Source: *Information and Communications Technologies in Schools Survey, 2003/04.*

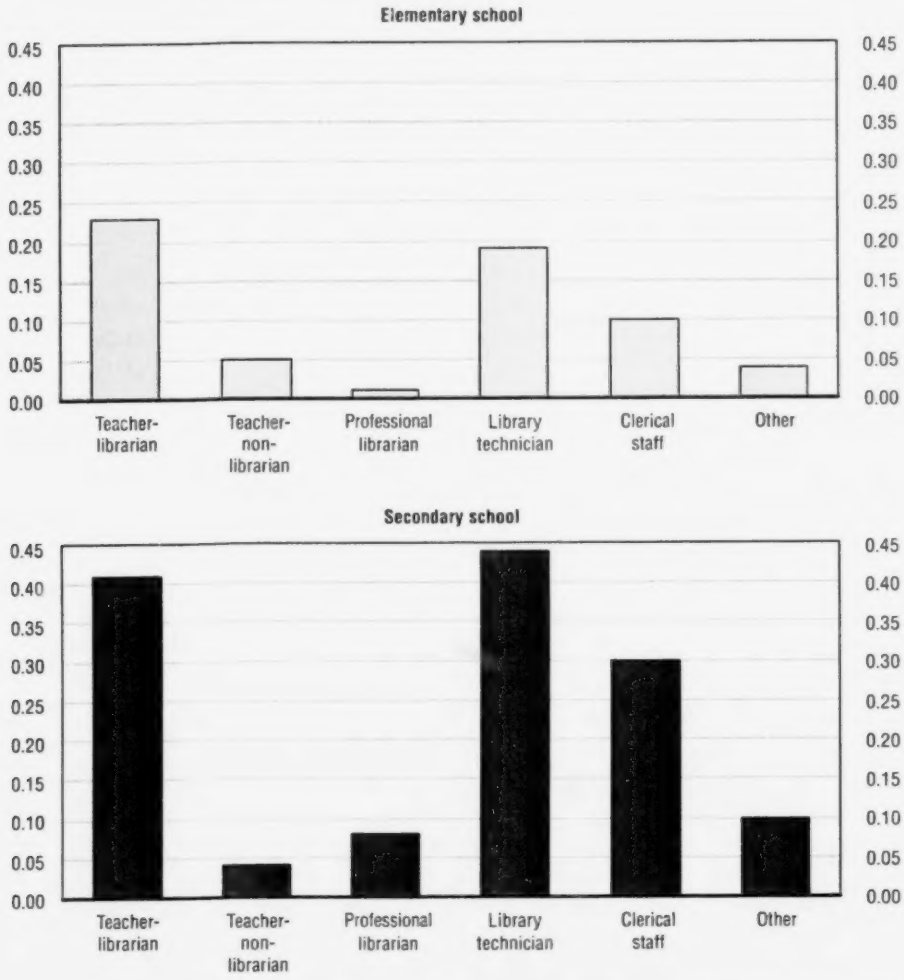
There were also staffing differences between elementary and secondary schools. The former, on average, had fewer FTE teacher-librarians per school (0.23) than the latter (0.41). Elementary schools also had a lower average number of library technicians (0.19) than secondary schools (0.44). Cumulatively, elementary schools had an average of 0.62 FTE staff devoted to the school library compared with 1.37 for secondary schools.

This difference in staffing between elementary and secondary schools can be explained by a much lower average student population in elementary (304) than in secondary schools (663). Since funding for a teacher-librarian is often tied in to the size of the student population, the discrepancy is not surprising. However, literature stresses the importance of promoting the library as a mental playground for the young imaginative mind and there are proven links between the presence of a well-stocked library and teacher-librarians, against student reading scores at all grade levels.[18]

Links have also been made, not only to student reading scores, but to the ability of teachers to teach the curriculum. A 2002 Canada Council report on the teaching of Canadian literacy in high schools reported that "Without a full-time qualified librarian, building a school collection is a difficult task. With large amounts of ELA (English Language Arts) budgets designated for anthologies and little money left for the purchase of individual literary texts, the access to literary material by students and teachers is further eroded by declining school libraries."[19]

Figure 1

Average number of library staff by type of position, elementary and secondary schools



Source: *Information and Communications Technologies in Schools Survey, 2003/04.*

4. Library funding

4.1 Annual expenses for library collection development

Extensive research on school libraries across a number of American states found that students tend to earn higher scores on state reading tests in schools with higher library funding per student, as well as those with higher levels of professional and total staffing and larger collections of print and electronic resources.[20]

The 14,451 ICTSS schools with libraries had expenses totalling $56.2 million for library collection development. Over three-quarters, or $42.9 million, was for physical collection (e.g., books, magazines) development, with the rest split between audio-visual materials (e.g., videos, CDs) (12.2%) and electronic materials (e.g. CD-ROMs, subscriptions to online journals) (11.5%).

Much variation across the provinces and territories existed for library expenses on physical collections. The Yukon ($5,978), followed by Alberta ($4,708) and Saskatchewan ($4,560) spent the most per school for library physical collection development in 2003/04. The lowest spending was in Newfoundland and Labrador ($1,606), followed closely by Nunavut ($1,609) and Nova Scotia ($1,762). One would expect that provinces with growing student enrolment, such as Alberta, would spend more on schools, including the library.

Looking at the median value (point at which half of the values are above and half of them are below) reveals that the Yukon still had the highest expenditures, but Saskatchewan was now second, followed by Alberta. Nationally, the median expenditure on the physical collection was just $2000. Given current costs of books, the median budget amount could cover the purchase of just one encyclopaedia series.

For audio-visual materials, Alberta led with an average expenditure of $845 per school library, followed by Saskatchewan ($766) and the Northwest Territories ($741). Nova Scotia had the lowest average expenditures ($162), followed by New Brunswick ($173). Median expenditures on audio-visual materials revealed much less variation. Saskatchewan and Alberta shared the highest median value ($500), while the Yukon, Nova Scotia and New Brunswick shared the lowest ($0).

For electronic materials, Alberta once again had the highest average expenditures ($630), followed by Ontario ($582) and Newfoundland and Labrador ($565). Median expenditures ranged from $0 to $100, indicating that most schools spent little or no money on electronic materials for their school libraries, regardless of province. Given the wide array of electronic education materials available, this is surprising.

Table 5

Mean and median annual expenses per school for the library collection development by type and province and territory, 2003/04

	Budget – Mean			Budget – Median		
	Physical collection	Audio-visual	Electronic	Physical collection	Audio-visual	Electronic
Newfoundland and Labrador	1,606	465	565	1,000	200	100
Prince Edward Island	2,250	463	226*	2,000	200	0*
Nova Scotia	1,762	162	199*	1,400	0	0*
New Brunswick	2,281	173	92	1,789	0	0
Quebec	2,649	518	493	1,680	100	100
Ontario	3,363	486	582	2,000	200	0
Manitoba	3,360	530	435	2,500	300	100
Saskatchewan	4,560	766	450	3,600	500	50
Alberta	4,708	845	630	3,000	500	50
British Columbia	4,010	561	477	2,700	200	0
Yukon	5,978	F	F	3,915	0	F
Northwest Territories	3,261	741*	446*	1,600	F	0*
Nunavut	1,609**	573**	245**	700**	500**	F
Canada	**3,414**	**547**	**513**	**2,000**	**200**	**0**

F coefficient of variation greater than 33%; data are too unreliable to publish

* coefficient of variation between 16.6% and 25%; data are less reliable

** coefficient of variation greater than 25% and less than or equal to 33%; data are less reliable

Source: *Information and Communications Technologies in Schools Survey, 2003/04.*

Saskatchewan and Alberta continued to lead the provinces when mean library spending is expressed per student. Spending in British Columbia and Manitoba was also above average while spending in Ontario and Quebec was below the national average. This illustrates that an east-west divide exists for per student spending on library collection development.

Table 6

Mean annual expenses per student for the library collection development, by type and province and territory, 2003/04

	Physical collection	Audio-visual	Electronic
		$	
Newfoundland and Labrador	9.10	2.11	2.20
Prince Edward Island	8.02	1.44	0.83*
Nova Scotia	7.02	0.50	0.54
New Brunswick	8.29	0.56	0.26
Quebec	8.46	1.39	1.51
Ontario	9.54	1.63	1.56
Manitoba	17.32	2.83	2.67*
Saskatchewan	23.31	3.95	2.34
Alberta	19.63	2.96	2.64
British Columbia	14.68	2.18	2.42**
Yukon	34.50	F	F
Northwest Territories	41.57**	F	2.79*
Nunavut	9.89**	4.23**	F

F coefficient of variation greater than 33%; data are too unreliable to publish

* coefficient of variation between 16.6% and 25%; data are less reliable

** coefficient of variation greater than 25% and less than or equal to 33%; data are less reliable

Source: *Information and Communications Technologies in Schools Survey, 2003/04.*

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4.2 Sources of library funding

Nationally, almost two out of every three schools (65.7%) were provided with library funds at the school level. For another six out of ten (60.5%) schools, funds were provided at the school board or district level. The provincial or territorial government provided funding for the school library in just over one-quarter (26.7%) of all cases. Lastly, other sources of library funding were noted by 29% of school principals. The majority of these were from fundraising activities, which included book fairs and donations. Data on the monetary value of funds by source, were not collected on the ICTSS.

Provincial and territorial variations were once again evident for funding. All Yukon schools were provided with library funding at the territorial level. Among the provinces, 63.7% of New Brunswick schools received library funding at the provincial level, compared with only 17.4% in Ontario.

New Brunswick, on the other hand, had the lowest provincial percentage of schools which received library funding at the school board level (45.5%) while Saskatchewan was the highest at 86.7%.

Over a third (37.8%) of Ontario schools listed 'other' sources of library funding, compared to just 12.8% in Saskatchewan. People for Education estimated that 62% of elementary schools in Ontario reported fundraising for library books in 2001/02 compared to 56% in 1998/99. This was much higher than the 6% of Ontario secondary schools reporting fundraising for library books in 2001/02.[21]

Table 7

Sources of funding for the library, by province and territory, 2003/04

	Provincial/territorial	School board	School	Other
Newfoundland and Labrador	28.2	66.7	77.8	18.7
Prince Edward Island	40.0	73.4	66.2	34.4
Nova Scotia	22.5	74.1	66.1	23.9
New Brunswick	63.7	45.5	28.3	22.4
Quebec	29.0	53.2	65.9	20.4
Ontario	17.4	62.2	70.8	37.8
Manitoba	38.4	74.4	55.2	25.1
Saskatchewan	23.3	86.7	43.9	12.8
Alberta	32.8	50.5	70.7	28.5
British Columbia	31.5	58.9	66.6	31.0
Yukon	100.0	F	F	F
Northwest Territories	16.7	F	F	F
Nunavut	53.8	F	F	F
Canada	**26.7**	**60.5**	**65.7**	**29.0**

F coefficient of variation greater than 33%; data are too unreliable to publish

* coefficient of variation between 16.6% and 25%; data are less reliable

** coefficient of variation greater than 25% and less than or equal to 33%; data are less reliable

Source: *Information and Communications Technologies in Schools Survey, 2003/04.*

5. Linking other measures to the presence of teacher-librarians and library funding

5.1 Student assessments

Research in the United States demonstrated a link between the size of library staff, the presence of a professionally-trained librarian who plays an active instructional role and library funding, with student reading scores.[22] Results from the 2003 Programme for International Student Assessment (PISA) show how 15 year-old students in Canada and the provinces performed on standard assessment tests in reading, mathematics, science and problem solving.

Although PISA results are presented here, no direct link can be made between these student assessment scores and provincial average number of teacher-librarians or library funding, as a variety of factors can explain provincial differences in PISA outcomes. To make causal links, an analysis would have to look at the presence of a teacher-librarian, library funding and PISA results for the same school. In addition, other potential factors which could influence student scores need to be examined. These include school, community or family factors. Conclusions could then be made as to whether schools with teacher-librarians and/or higher amounts of library funding also have higher average levels of student achievement. A study of this detail is not undertaken here. Therefore, the analysis is exploratory and not causal.

Prince Edward Island led all provinces for average number of teacher-librarians in its schools. On PISA testing, however, PEI students collectively ranked last on all four assessments (reading, science, mathematics and problem solving). Alberta, on the other hand, had amongst the lowest average number of teacher-librarians in elementary and secondary schools, but ranked first amongst all provinces for all four measures. Further, if the performance of Alberta students is compared to all 40 countries that participated in PISA the province would rank at or near the top for all four measures. Although this contradicts much outstanding research, such as that by Currie Lance, it really illustrates that causal links cannot be made using data from different sources (as in this case), or even from the same source without controlling for other factors that could influence outcomes. Again, causal links could likely be made if PISA student assessments by school were linked with the presence of a teacher-librarian and by level of library funding for the same school. Although this could be done, it represents the next level of research.

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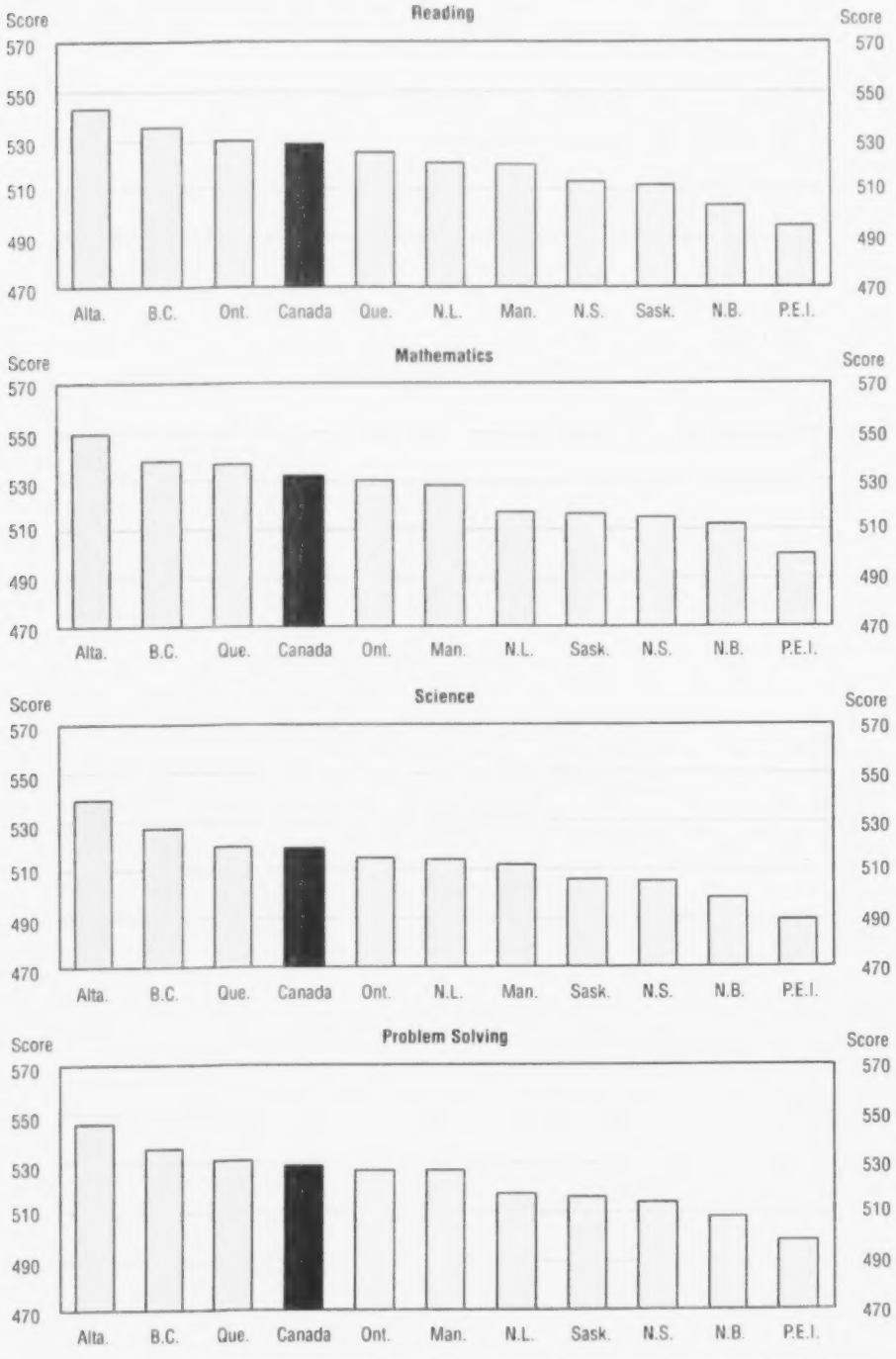
Figure 2

Student assessments by subject and province, 2003



Source: *Measuring up: Canadian Results of the OECD PISA Study, Human Resources and Skills Development Canada and Statistics Canada, Catalogue No. 81-590-XPE, 2004.*

One other potential influence on student outcomes is library funding. The large amount of funding per school library in Alberta contrasts with its low average number of teacher-librarians per school and per student. It does, however, conform to high student PISA assessments in Alberta, and the expectation that better funded libraries should contribute to higher levels of student achievement. Once again, this conclusion cannot be verified in this study as the data sources are not the same and many other factors must be considered in explaining student assessments.

5.2 Student-educator ratios, per capita expenditures on education and education expenditures as share of total expenditures

Do provinces with low numbers of teacher-librarians and levels of library funding also have low student-educator ratios? This has been hypothesized because funding decisions may require choosing between staff such as teacher-librarians and the number of educators per student. Although this question can be carried only so far in this analysis of cross-sectional ICTSS data, we will present a cursory examination.

Alberta and British Columbia had the highest student-educator ratios for public schools in Canada in 2002/03. Alberta was also one of only two provinces which had growth in enrolments in public schools from 2001/02 to 2002/03 (See Appendix C)[23]. This province, however, proved to be somewhat of a contradiction. Despite having the highest student-educator ratio, it also had one of the lowest mean number of FTE teacher-librarians and the highest mean number of library technicians per school. Yet it led for library funding per school.

British Columbia, on the other hand, had a high student-educator ratio, but was well above the national average for the number of teacher-librarians per school. This was the relationship which was expected – a trade off between the number of educators per student and specialized staff.

Prince Edward Island had a student-educator ratio which was slightly below the national average, while Newfoundland and Labrador and Yukon had the lowest ratios.[24] From 1996-1997 to 2002/03, however, the ratios fell in all provinces and territories, except for British Columbia and Ontario.[25]

Although no direct links can be made between changes in student-educator ratios and the decision to staff a full or part-time teacher-librarian, since trend data on the latter is not yet available, funding decisions may come down to choosing between retaining specialized staff and programs, or increasing student-educator ratios. Again, a second phase of research could link the student-educator ratio with library staffing and funding for the same school, to examine causal relationships.

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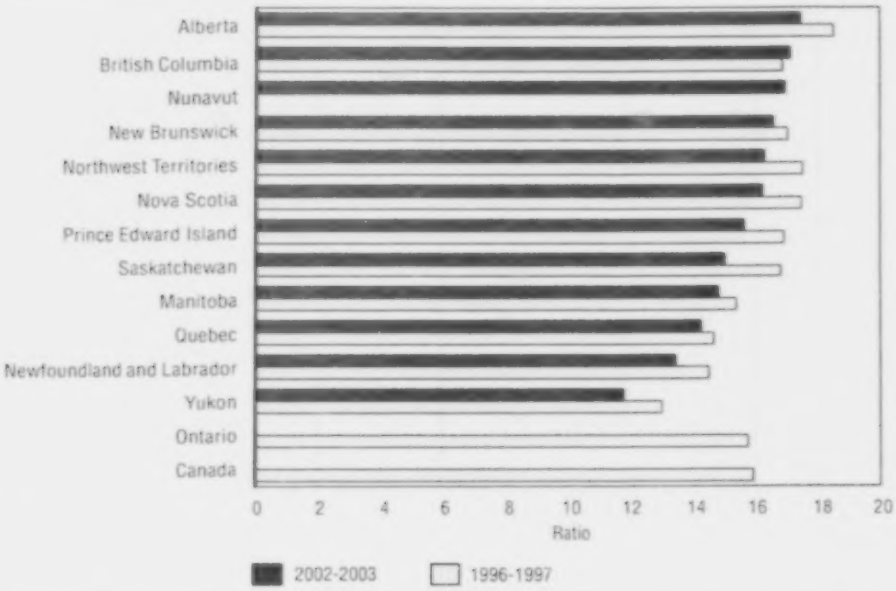
Figure 3
Student-educator ratios, 1996-1997 and 2002-2003

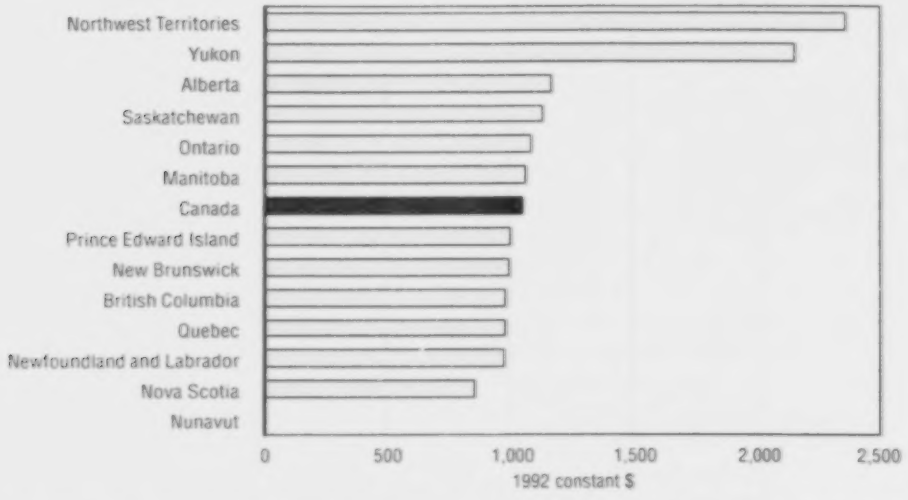


Source: *Summary public school indicators for the provinces and territories, 1996-1997, Statistics Canada, Catalogue No. 81-595-MIE – No. 22, September 2004, p. 20.*

Despite having the highest number of students per educator and one of the lowest average numbers of teacher-librarians per school (0.07), Alberta led all provinces for per capita expenditures in public schools, as well as public school expenditures as a percentage of total provincial and local government expenditures. Quebec, which also had one of the lowest average numbers of teacher-librarians, had a relatively low student-educator ratio. Despite the low ratio it was below the national level for school expenditures as a percentage of total expenditures and per capita expenditures.

Figure 4

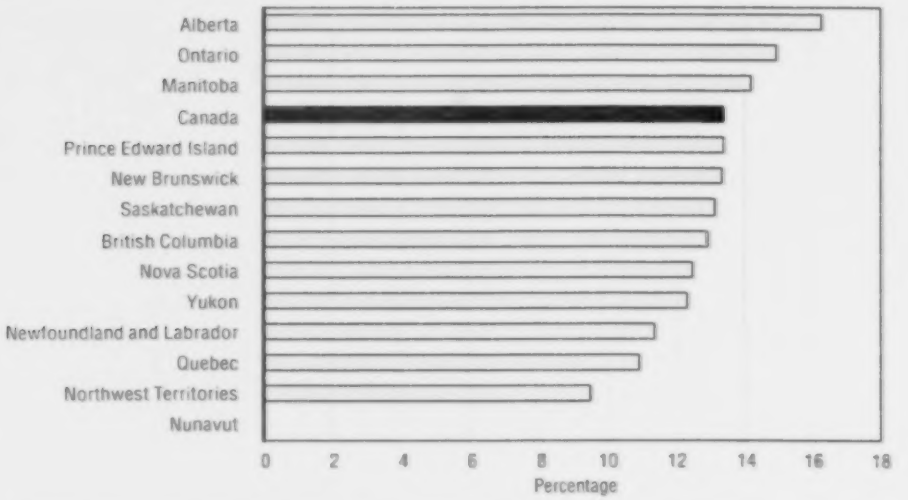
Total expenditure in public elementary and secondary schools per capita, by province and territory, 2002-2003 (in 1992 constant $)



Source: Summary public school indicators for the provinces and territories, 1996-1997, Statistics Canada, Catalogue No. 81-595-MIE – No. 22, September 2004, p. 34.

Figure 5

Total expenditure in public elementary and secondary schools as a percentage of total expenditures of provincial and local governments, by province and territory, 2002-2003



Source: Summary public school indicators for the provinces and territories, 1996-1997, Statistics Canada, Catalogue No. 81-595-MIE – No. 22, September 2004, p. 37.

6. Presence of teacher-librarians and library funding – links to incorporation of technology applications in teaching practices

Given that teacher-librarians are trained in the use of technology for information retrieval and search and part of their duties is the training of staff and students, it is possible that schools with a qualified teacher-librarian are more likely to incorporate technology applications into teaching practices. In addition, in some schools the teacher-librarian also serves as the IT resource person. The American Association of School Librarians states that the school library has undergone a 'radical change in emphasis.' The library has gone beyond the simple provision of resources to students, and it now focuses on creating lifelong learners equipped with the skills to locate, use and evaluate information. Information literacy, whether electronic or otherwise, is fundamental to the school library program.[26]

In order to provide a cursory examination of a link between the presence of a teacher-librarian and the use of technology applications in teaching, simple correlations were performed using the number of FTE[27] teacher-librarians against each of the technology applications.[28] These correlations were also repeated for another independent variable: the number of teacher-librarians per student. This attempted to define the influence of a teacher-librarian relative to the size of the student body they served.

Following this, correlations were also performed for library funding and funding per student against each type of technology application to see if these two measures were linked to the incorporation of technology into teaching.

Box 6.1 Methods

A simple Pearson correlation was performed against each pair of variables. For example, the number of teacher librarians was correlated with the incorporation of desktop publishing software in teaching practices.

The strength of the relationship was given by the r value. The perfect positive linear relationship has an $r = 1.0$ while the perfect negative linear correlation has an $r = -1.0$. Not all correlations are linear, however. Hence the significance of the relationship, or the p-value, is of paramount analytical importance. This p-value gives the probability of observing an r-value this rare or rarer under the assumption of no correlation. When a large p-value is observed, generally larger than 0.05, a lack of association is suggested. On the other hand, for small p-values, smaller than 0.05, say, the correlation between the two variables is said to be significant.

6.1 Correlation results

All applications were positively and very significantly ($p<.0001$) correlated with the number of teacher-librarians devoted to the school library. The highest correlations or r-values were for spreadsheets and databases, applications supporting creative works (e.g. music, fine arts and graphic design), software for special needs and desktop publishing. The lowest correlations were for more generic applications: word processing and using the Internet/intranet to disseminate information. There seems to be a strong correlation between incorporating 'specialized' applications into teaching practices and the number of teacher-librarian staff.

For the number of teacher-librarians per student, the correlations were weaker for each application, compared with the correlations for teacher-librarians. There was a positive and significant relationship for only one application: software supporting creative work ($p<.05$). Applications that facilitate using Internet/Intranet to disseminate information had a negative but non-significant relationship with the number of FTE teacher-librarians per student. Overall, introducing a measure which accounts for the size of the student body, teacher-librarians per student, weakens the correlation for each technology application.

The much stronger relationship between the absolute number of teacher-librarians and use of each technology application, than for the teacher-librarian-to-student ratio, is interesting. It is possible that within the Canadian context it is not so much the number of teacher-librarians per student which affects use of different software in teaching practices, as it is the absolute number of teacher-librarians, or a critical point of staffing which is required. Caution should be exercised in interpreting these results, however, as the number of teacher-librarians might in itself reflect schools that are better funded and have more money to purchase specialized technology applications, such as desktop publishing software. Also, the degree to which teacher-librarians have a role in incorporating technology into teaching practices will vary with the responsibilities of each librarian, their skill level and the availability of other technical support in the school. These elements were not captured in the ICTSS.

Table 8

Correlation results for teacher-librarian and teacher-librarian per student, by type of technology application, 2003/04

	Teacher-librarian		Teacher-librarian per student	
	r	p value	r	p value
Software for special needs	0.163	<.0001	0.011	0.448
Software for specific subject areas	0.123	<.0001	0.023	0.105
Spreadsheets and database	0.169	<.0001	0.024	0.087
Word processing	0.068	<.0001	0.014	0.305
Desktop publishing	0.151	<.0001	0.020	0.155
Presentation software	0.134	<.0001	0.004	0.786
Software supporting creative works	0.168	<.0001	0.030	0.034
Using internet/intranet to disseminate information	0.071	<.0001	-0.008	0.559
Internet for on-line learning	0.120	<.0001	0.025	0.076

Source: *Information and Communications Technologies in Schools Survey, 2003/04.*

As with the correlation results for the presence of a teacher-librarian, the absolute amount of funding for the school library is very strongly correlated ($p<.0001$) to the incorporation of each type of software application into teaching practices, except one: software for special needs students. The highest r values were for presentation software, spreadsheets and databases and software supporting creative works.

Per student funding, on the other hand, was significantly correlated ($p<.05$) with only two applications: software supporting creative works and presentation software. For each type of application, the relationship with per-student funding was less significant (weaker) than for total funding.

None of the correlations, however, exceeded $r = .18$. This is not surprising given the large sample size. Furthermore, an r-value of one indicates a perfect linear correlation. A perfect non-linear correlation would not, however, have an r-value of one.

The introduction of the per student measure for the number of teacher-librarians and library funding weakened the correlation for each type of technology application. It appears that within a Canadian context, the absolute number of teacher-librarians and the amount of library funding have stronger links to the use of technology applications in teaching than per student measures.

Table 9

Correlation results for library funding and funding per student, by type of technology application, 2003/04

	Library funding		Library funding per student	
	r	p value	r	p value
Software for special needs	0.022	0.1324	0.008	0.583
Software for specific subject areas	0.070	<.0001	0.025	0.088
Spreadsheets and database	0.166	<.0001	0.019	0.210
Word processing	0.064	<.0001	0.008	0.607
Desktop publishing	0.104	<.0001	0.027	0.066
Presentation software	0.180	<.0001	0.034	0.021
Software supporting creative works	0.161	<.0001	0.037	0.013
Using internet/intranet to disseminate information	0.098	<.0001	0.013	0.365
Internet for on-line learning	0.092	<.0001	-0.002	0.881

Source: *Information and Communications Technologies in Schools Survey, 2003/04.*

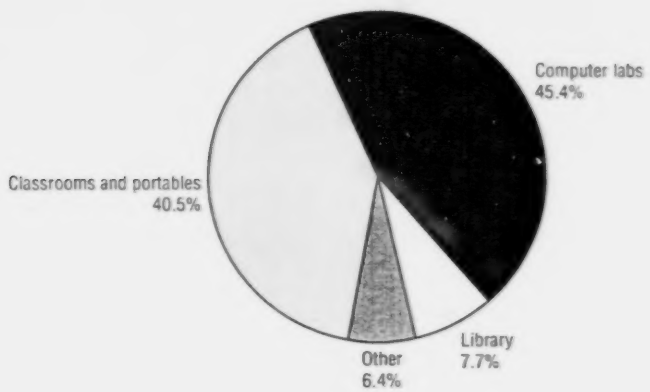
7. Location of computers

About one in twelve (8%) of all computers were located in the school library (for schools with libraries). This compares with 45% in computer labs and 40.5% in classrooms. This doesn't illustrate a strong link between the library and computing facilities, but is probably more a reflection of the prevalence of computers in today's classrooms and laboratories, rather than an absence of computers in school libraries.

In some schools, the teacher-librarian is allocated part-time to the library and part-time to technology support. As well, computers in libraries are essential to perform Internet searches and conduct research.

Figure 6

Location of desktops and laptops/notebooks, 2003/04



Source: *Information and Communications Technologies in Schools Survey, 2003/04.*

8. School website

8.1 What's on the school website?

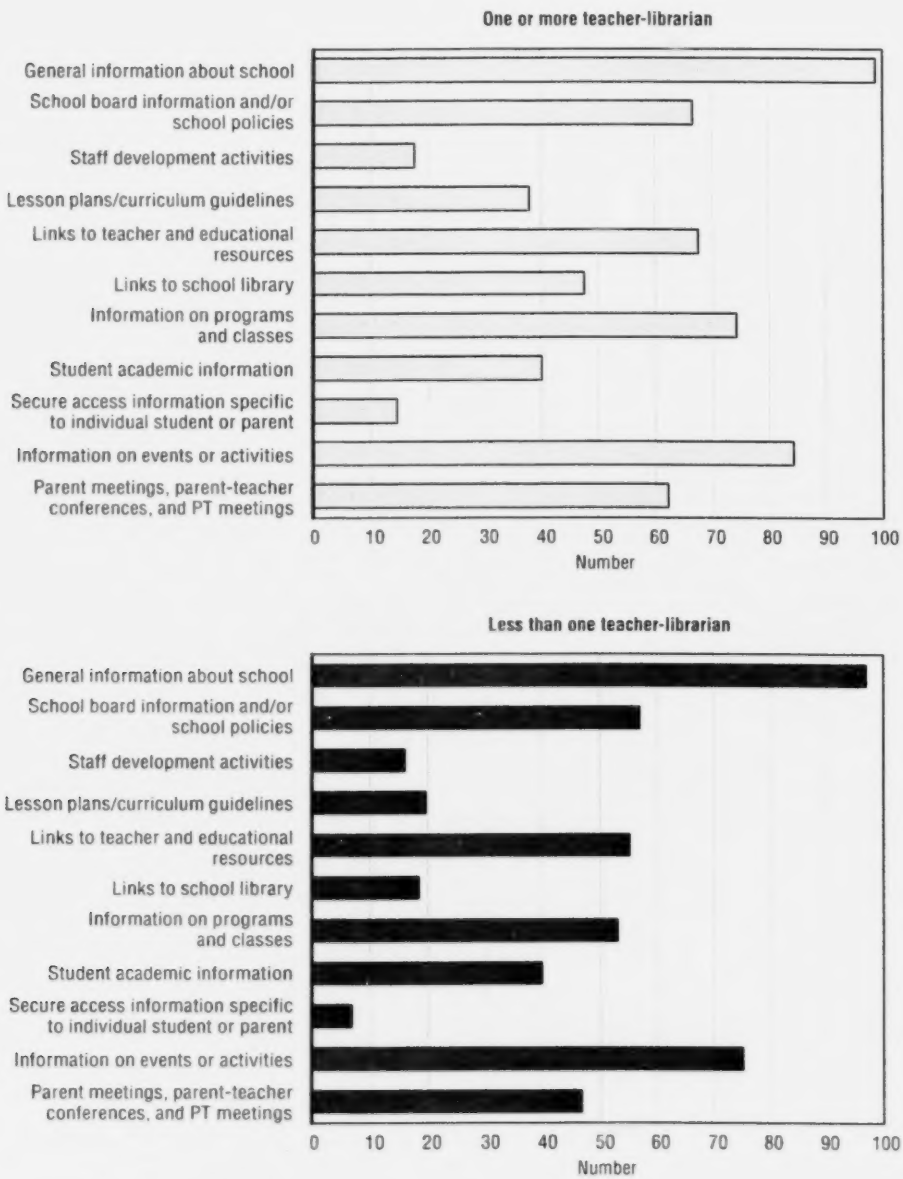
For schools with libraries, 44% had a non-administrative website for educational purposes that could be used by teachers and/or students to share information. For schools with a full-time teacher-librarian, 47.5% had links to the school library on the informal website. This contrasts with just 18.5% for schools without a full-time teacher-librarian (less than one FTE teacher-librarian devoted to the school library). Although a direct link cannot be established between the presence of a teacher-librarian and having links to the library on the school website, it is highly likely that they are related. That is, the presence of an active school-librarian likely facilitates the exchange of information on the school library, through means such as the school website.

In the United States, research found that 'schools where computer networks provide remote access to library resources, particularly the Web and licensed databases, (student) test scores (on reading) tend to be higher.'[29] While this cannot yet be demonstrated for Canada, it is a finding which might deserve further research.

Interestingly, Canadian schools with one or more teacher-librarian were also much more likely to have information on the informal website regarding the school board (i.e. policies), programs and classes and parent-teacher meetings.

Figure 7

Types of material on the school website, for schools with library and informal website, by number of FTE teacher-librarians, 2003-04


One or more teacher-librarian
General information about school
School board information and/or school policies
Staff development activities
Lesson plans/curriculum guidelines
Links to teacher and educational resources
Links to school library
Information on programs and classes
Student academic information
Secure access information specific to individual student or parent
Information on events or activities
Parent meetings, parent-teacher conferences, and PT meetings
0 10 20 30 40 50 60 70 80 90 100
Number
Less than one teacher-librarian
General information about school
School board information and/or school policies
Staff development activities
Lesson plans/curriculum guidelines
Links to teacher and educational resources
Links to school library
Information on programs and classes
Student academic information
Secure access information specific to individual student or parent
Information on events or activities
Parent meetings, parent-teacher conferences, and PT meetings
0 10 20 30 40 50 60 70 80 90 100
Number

Source: *Information and Communications Technologies in Schools Survey, 2003/04.*

8.2 Teacher-librarians as contributors to the website

In schools with an informal website, a library, and either a full or part-time (greater than zero) teacher-librarian devoted to the school library, many of the teacher-librarians contributed to the website. For example, in schools with at least one FTE teacher-librarian, 35% of principals stated that the teacher-librarian was 'very important' in developing and/or contributing to the school website and 27% said they were 'important'. This compares with 19.1% and 20.6%, respectively, for schools with less than one FTE teacher-librarian. Once again the presence of a full-time teacher-librarian seems to be linked to information dissemination, this time through the development of the website and contribution of content.

Table 10

Contributors to and/or developer of the school website, by amount of FTE teacher-librarians, 2003/04

	Not at all important	Somewhat important	Important	Very important	Total
			%		
One or more teacher-librarian					
Students	10.1	28.2	27.0	34.8	100.0
Former students	46.8	30.2	11.0	12.0	100.0
Teachers	3.3*	15.6	32.9	48.2	100.0
Teacher-librarians	14.2	23.8	27.0	35.0	100.0
ICT professional in school	20.0	14.7	19.4	45.9	100.0
Other paid people	52.9	12.1	13.8	21.3	100.0
Volunteers outside school	45.9	27.9	13.1	13.1	100.0
School board/district/jurisdiction	26.8	35.2	19.0	19.0	100.0
Less than one teacher-librarian					
Students	15.5	32.9	29.1	22.6	100.0
Former students	57.1	25.5	9.4	8.0	100.0
Teachers	4.4	18.7	30.4	46.5	100.0
Teacher-librarians	35.5	24.8	20.6	19.1	100.0
ICT professional in school	18.9	13.0	21.8	46.3	100.0
Other paid people	47.3	11.9	17.8	23.0	100.0
Volunteers outside school	44.5	23.2	15.4	17.0	100.0
School board/district/jurisdiction	27.8	27.3	24.5	20.5	100.0

F coefficient of variation greater than 33%: data are too unreliable to publish

* coefficient of variation between 16.6% and 25%: data are less reliable

** coefficient of variation greater than 25% and less than or equal to 33%; data are less reliable

Source: *Information and Communications Technologies in Schools Survey, 2003/04.*

9. Conclusion

Although most schools in each province and territory had a library, similarities end there. Prince Edward Island led all provinces with 34.8% of schools having one or more full-time teacher-librarians compared with just 2.0% of schools in Quebec and 3.6% in Alberta. In fact, there were more library technicians in each Canadian school, on average, than teacher-librarians.

Library collections funding revealed a somewhat different pattern. The mean annual expenses per school for library collection development were higher in Alberta than any other province. This held for all three measures: the physical collection, audio-visual materials and electronic materials. Saskatchewan and British Columbia schools followed for overall expenditures on the library collection. Prince Edward Island, however, spent well below the national average per library.

Staffing of teacher-librarians and library funding were then examined against student assessments, given that other studies have shown positive links between these factors. Although Alberta had very low levels of teacher-librarian staffing it had the highest levels of library funding. This province also had the highest PISA scores. PEI, on the other hand, had the highest levels of teacher-librarian staffing, but lower than average funding of its school library collections. It ranked last on all four PISA measures.

These contradictory results illustrate the difficulty in establishing a clear and direct link between the presence of a teacher-librarian and library collections funding, against indicators of student assessments for Canada. The available data sources are different so the analysis was performed by province rather than by school. Also, other elements of school libraries have been documented as having an impact on student scores, such as library hours and the size of the collection, but these were not collected in the ICTSS. Lastly, such an analysis would have to control for community or family-level influences. Further analysis bringing together the ICTSS data on school libraries and librarians with data sources containing student assessment results is required to understand the dynamic at play. Creating a link between several different sources by school is possible, and would represent a second stage of research. This issue could be addressed by adding several school library questions to the PISA questionnaire, so analytical data could be obtained from one survey.

Supplementary data on student-educator ratios were examined since funding decisions for specialized positions such as teacher-librarians are often traded off against student-educator ratios. Surprisingly, Alberta had the highest student-teacher ratios despite having one of the lowest mean number of FTE teacher-librarians per school and one of the highest mean number of library technicians. Alberta was one of two provinces that dealt with rising enrolments from 1996-

1997 to 2002-2003. British Columbia, on the other hand, had a high student-educator ratio, but it was also well above the national average for teacher-librarians per school.

Despite having few teacher-librarians in school libraries, Alberta had the highest provincial per capita public school expenditures. These expenditures also represented a higher share of total provincial and local government expenditures than for any other province. Therefore, Alberta is among the leaders in spending on public education, as well as school libraries, despite having few teacher-librarians on staff.

Nationally, more school libraries received funds from the school itself (65.7%) and school board or district level (60.5%) than provincial or territorial governments (26.7%). In fact, more schools mentioned receiving funds from other sources (29%), such as book fairs, parent-teacher associations and donations, than from provincial/territorial governments. The absolute dollar amount of funding by source was not collected in the ICTSS.

The hypothesis that schools with teacher-librarians are more likely to incorporate technology applications into teaching practices was examined. In this case, causation could not be established so correlation was the primary analytical point of interest. All technology applications were positively and very significantly correlated to the number of FTE teacher-librarians devoted to the school library. The strongest relationships were for spreadsheets and databases, software applications supporting creative works, software for special needs and desktop publishing. The weaker (but still very significant) relationships were for less specialized applications such as word processing and using the Internet/Intranet to disseminate information. Generally, there seemed to be a stronger correlation between the number of FTE teacher-librarian staff and incorporating "specialized" technology applications into teaching practices. For the number of FTE teacher-librarians per student, the strength of the relationship with each technology application was weaker than for FTE teacher-librarians.

Looking at the relationship between library funding and funding per student against each technology application revealed the same general result. The amount of library funding is positively and very significantly correlated to each technology application, except software for special needs. Looking at funding per student, however, weakened each correlation.

The link between the presence of teacher-librarians and dissemination of information was examined by looking at schools with informal websites. Schools with at least 1.0 FTE teacher-librarian devoted to the school library were much more likely to have links to the school library on the informal website (47.5%) than those without a full-time teacher-librarian (18.5%). Furthermore, more principals stated that the school-librarian was important or very important in developing and/or contributing to the informal website (62%) in schools with one or more teacher-librarians than in schools with fewer teacher-librarian resources (39.7%). It appears that the influence of the teacher-librarian transcends the library and extends into other realms of the school, and therefore the student's education.

Finally, another iteration of the ICTSS would provide a time dimension, allowing trend analysis on libraries, staffing and funding. This would be invaluable in strengthening the understanding of the challenges facing Canadian school libraries, or the successes, in the early 21st century.

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2. Haycock, Ken, *The Crisis in Canada's School Libraries: the Case for Reform and Re-investment*, Association of Canadian Publishers, June 2003.
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4. See Durand, Michel and Marla Waltman Daschko, *Elementary and Secondary Schools: The Role, Challenges and Financial Conditions of School and School Library Resources in Canada*, Statistics Canada, September 2001.
5. Statistics Canada ran library surveys from 1921 to 1991 covering school, public, academic and special libraries. Funding cuts in the 1970's and 1980's resulted in the eventual cancellation of all four surveys.
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23. Alberta's increase was 0.5%. The other province was Ontario at 0.2%. B.C. experienced a -1.2% decline compared with a national decline of -0.4%.
24. FTE enrolment declines were -3.0% for Newfoundland and Labrador and -0.1% for Prince Edward Island.
25. The 2001/02 school year was used for Ontario as data for 2002/03 were not available. Therefore national level data are also only available for 2001-2002.
26. Lonsdale, Michele, *Impact of School Libraries on Student Achievement*, Australian School Library Association, 2003, p.7.
27. All references to teacher-librarians will be assumed to be full-time equivalent (FTE) unless otherwise indicated.
28. The exact question to which principals responded was 'To what extent are the following technology applications incorporated into teaching practices in your school?'
29. Curry Lance, Keith, *The Importance of School Libraries*, www.lrs.org/impact.asp, 2004.

Appendices: Statistical tables

Appendix A

Presence of school library by province and territory

	Yes	No	%
Newfoundland and Labrador	313	18	94.6
Prince Edward Island	F	F	F
Nova Scotia	458	15*	96.8
New Brunswick	357	8*	97.8
Quebec	2,764	234	92.2
Ontario	5,256	363	93.5
Manitoba	750	67	91.8
Saskatchewan	765	41*	94.9
Alberta	1,710	165	91.2
British Columbia	1,911	106	94.7
Yukon	F	F	F
Northwest Territories	39	12*	76.5
Nunavut	31	7	81.6
Canada	**14,451**	**1,038**	**93.3**

F coefficient of variation greater than 33%; data are too unreliable to publish

* coefficient of variation between 16.6% and 25%; data are less reliable

** coefficient of variation greater than 25% and less than or equal to 33%; data are less reliable

Source: Information and Communications Technologies in Schools Survey, 2003/04.

Appendix B

Library staff by position and province and territory

	Teacher-librarian	Teacher-non-librarian	Professional librarian	Library technician	Clerical staff	Other	Total
Newfoundland and Labrador	80	25*	F	F	9**	9**	136
Prince Edward Island	39	F	F	F	F	F	50
Nova Scotia	29	F	19	179	24	F	266
New Brunswick	28	12*	17	87	39	35	218
Quebec	72*	281*	166	484	371	168*	1,542
Ontario	1,908	167**	108*	1,166	534	154	4,037
Manitoba	121	20**	27**	292	188	44**	692
Saskatchewan	180	F	F	320	133	52*	714
Alberta	107	88	61	759	365	159	1,539
British Columbia	848	52*	F	169	381	73**	1,544
Yukon	10	F	F	F	F	F	19
Northwest Territories	F	F	F	10*	F	F	21
Nunavut	F	F	F	F	F	F	7
Canada	**3,424**	**679**	**433**	**3,476**	**2,060**	**712**	**10,784**

F coefficient of variation greater than 33%; data are too unreliable to publish

* coefficient of variation between 16.6% and 25%; data are less reliable

** coefficient of variation greater than 25% and less than or equal to 33%; data are less reliable

Source: Information and Communications Technologies in Schools Survey, 2003/04.

Appendix C

Full-time equivalent (FTE) enrolments in public elementary and secondary schools, by province and territory, 2002/03

	Enrolment	Change from 2001/02 to 2002/03
Newfoundland and Labrador	81,651	-3.0
Prince Edward Island	23,132	-1.0
Nova Scotia	150,599	-1.9
New Brunswick	120,600	-1.8
Quebec	1,083,427	-0.6
Ontario	2,042,392	0.2
Manitoba	180,895	-0.2
Saskatchewan	171,674	-2.0
Alberta	520,956	0.5
British Columbia	580,407	-1.2
Yukon	5,414	0.2
Northwest Territories	9,422	0.6
Nunavut	8,545	1.6
Canada	**4,979,112**	**-0.4**

Source: Summary public school indicators for the provinces and territories, 1996-1997 to 2002-2003, Statistics Canada, Catalogue no. 81-595-MIE – No. 22, September 2004, p. 16.

Culture, Tourism and the Centre for Education Statistics

Research Papers

Cumulative Index

Statistics Canada's **Division of Culture, Tourism and the Centre for Education Statistics** develops surveys, provides statistics and conducts research and analysis relevant to current issues in its three areas of responsibility.

The **Culture Statistics Program** creates and disseminates timely and comprehensive information on the culture sector in Canada. The program manages a dozen regular census surveys and databanks to produce data that support policy decision and program management requirements. Issues include the economic impact of culture, the consumption of culture goods and services, government, personal and corporate spending on culture, the culture labour market, and international trade of culture goods and services. Analysis is also published in *Focus on Culture* (87-004-XIE, $8, http://www.statcan.ca:8096/bsolc/english/bsolc?catno=87-004-X).

The **Tourism Statistics Program** provides information on domestic and international tourism. The program covers the Canadian Travel Survey and the International Travel Survey. Together, these surveys shed light on the volume and characteristics of trips and travellers to, from and within Canada. Analysis is also published in *Travel-log* (87-003-XIE, $5, http://www.statcan.ca:8096/bsolc/english/bsolc?catno=87-003-X).

The **Centre for Education Statistics** develops and delivers a comprehensive program of pan-Canadian education statistics and analysis in order to support policy decisions and program management, and to ensure that accurate and relevant information concerning education is available to the Canadian public and to other educational stakeholders. The Centre conducts fifteen institutional and over ten household education surveys. Analysis is also published in *Education Matters* (81-004-XIE, free, http://www.statcan.ca:8096/bsolc/english/bsolc?catno=81-004-X), and in the *Analytical Studies Branch research paper series* (11F0019MIE, free, http://www.statcan.ca:8096/bsolc/english/bsolc?catno=11F0019M).

Following is a cumulative index of Culture, Tourism and the Centre for Education Statistics research papers published to date

Research papers

81-595-MIE2002001	Understanding the rural-urban reading gap
81-595-MIE2003002	Canadian education and training services abroad: the role of contracts funded by international financial institution
81-595-MIE2003003	Finding their way: a profile of young Canadian graduates
81-595-MIE2003004	Learning, earning and leaving – The relationship between working while in high school and dropping out
81-595-MIE2003005	Linking provincial student assessments with national and international assessments
81-595-MIE2003006	Who goes to post-secondary education and when: Pathways chosen by 20 year-olds
81-595-MIE2003007	Access, persistence and financing: First results from the Postsecondary Education Participation Survey (PEPS)
81-595-MIE2003008	The labour market impacts of adult education and training in Canada
81-595-MIE2003009	Issues in the design of Canada's Adult Education and Training Survey
81-595-MIE2003010	Planning and preparation: First results from the Survey of Approaches to Educational Planning (SAEP) 2002
81-595-MIE2003011	A new understanding of postsecondary education in Canada: A discussion paper
81-595-MIE2004012	Variation in literacy skills among Canadian provinces: Findings from the OECD PISA
81-595-MIE2004013	Salaries and salary scales of full-time teaching staff at Canadian universities, 2001-2002: final report
81-595-MIE2004014	In and out of high school: First results from the second cycle of the Youth in Transition Survey, 2002
81-595-MIE2004015	Working and Training: First Results of the 2003 Adult Education and Training Survey
81-595-MIE2004016	Class of 2000: Profile of Postsecondary Graduates and Student Debt
81-595-MIE2004017	Connectivity and ICT integration in Canadian elementary and secondary schools: First results from the Information and Communications Technologies in Schools Survey, 2003-2004

Following is a cumulative index of Culture, Tourism and the Centre for Education Statistics research papers published to date

Research papers

81-595-MIE2004018	Education and labour market pathways of young Canadians between age 20 and 22: an Overview
81-595-MIE2004019	Salaries and salary scales of full-time teaching staff at Canadian universities, 2003-2004
81-595-MIE2004020	Culture Goods Trade Estimates: Methodology and Technical Notes
81-595-MIE2004021	Canadian Framework for Culture Statistics
81-595-MIE2004022	Summary public school indicators for the provinces and territories, 1996-1997 to 2002-2003
81-595-MIE2004023	Economic Contribution of Culture in Canada
81-595-MIE2004024	Economic Contributions of the Culture Sector in Ontario
81-595-MIE2004025	Economic Contribution of the Culture Sector in Canada – A Provincial Perspective
81-595-MIE2004026	Who pursues postsecondary education, who leaves and why: Results from the Youth in Transition Survey
81-595-MIE2005027	Salaries and salary scales of full-time teaching staff at Canadian universities, 2002-2003: final report
81-595-MIE2005028	Canadian School Libraries and Teacher-Librarians: Results from the 2003/04 Information and Communications Technologies in Schools Survey